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ABSTRACT

This report examines the progress in human capital development made by counties in the South during the 1980s. County-level data from 13 southern states were collected primarily from the 1980 and 1990 censuses. Thirteen maps depict, at the county level, completion of high school or more in 1980 and 1990, percent change in high school completion during the decade, median educational level in 1980, percent of population with less than a ninth grade education in 1990, high school dropout rates in 1990, college completion in 1980 and 1990, completion of advanced or professional degree in 1990, percent change in income during the decade, compound average annual income growth rate during the decade, and poverty rate in 1990. Counties in Appalachian Kentucky and Tennessee, along the Mississippi River, and bordering the Rio Grande in Texas had low high school completion rates in 1980. By 1990, the Mississippi River counties showed notable reductions in the proportion of the population without a high school diploma, especially in comparison to the counties in Kentucky, Tennessee, and Texas. However, these Mississippi River counties did not show an accompanying increase in income, and their poverty rates continued high in 1990. Maps depicting college completion look quite different from those depicting high school completion, since college graduates, particularly in rural areas, must leave their home communities to find appropriate employment. Overall, progress has been made in the U.S. South in terms of raising human capital stocks, but considerable disparities remain, even within individual states. (SV)

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ED 369 642

The State of Human Capital in the U.S. South: 1980-90

by
Stephan J. Goetz
and
David L. Debertin
University of Kentucky

U.S. DEPARTMENT OF EDUCATION
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The State of Human Capital in the U.S. South: 1980-90

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March 1994

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The State of Human Capital in the U.S. South: 1980-90

Introduction and Objectives

States in the South have traditionally lagged behind other regions of the U.S. by virtually any measure of human capital development, whether it be per pupil spending, student achievement scores, high-school dropout rates, or median educational attainment of the population. At the national level, rural areas fell still further behind urban areas in terms of human capital stocks during the 1980s (McGranahan and Ghelfi, 1991). The noted labor economist Lawrence Katz recently observed that real earnings of less-educated, young males declined by 20 percent between 1980 and 1990, contributing to rising wage inequality in the nation (Katz, 1992).

Our general objective here is to provide an assessment of the *State of the South* with regard to human capital development over the decade of the 1980s. More specifically, we examine county-level data on education and income-related variables using primarily the 1980 and 1990 Census of the Population (U.S. Department of Commerce). From this county-level data, a series of consistent indicators is developed representing the progress that each county in each state in the South has made in human capital development during the 1980s. This is complemented by indicators of economic progress between 1980 and 1990. The results are divided into four major sections dealing with (1) high school completion measures; (2) dropout measures (3) college completion measures; and (4) income and poverty measures. The discussions are not exhaustive but are instead intended to provide a general overview of the findings. The 1980 maps provide a base point for analyzing changes that took place during the decade.

Background

Education is generally thought to be an important factor contributing to economic growth, along with growth in labor and capital stocks (e.g., Blaug, 1989; Denison, 1985; Hackbart et al., 1987; Psacharopoulos, 1987 [Pt. III]). If rural counties in the South lag behind the rest of the nation in human capital development, then they are also likely to lag behind the rest of the nation in industrial development. Educational attainment of the workforce remains a key factor influencing industrial location decisions. When Toyota Motor Corp. interviewed applicants for their Kentucky plant, many were surprised about the importance that Toyota managers placed on formal education, even for comparatively low-level, but high-wage jobs. Goetz et al. (1993) found that formal education (measured by years of schooling completed) was a key determinant of employment in a chronically depressed region of rural Kentucky, regardless of whether the local economy was expanding or contracting.

Human capital development also has other, often surprising, impacts. Goetz and Debertin (1992*a*) found that states with proportionately more high-school graduates tend to treat the environment more favorably (holding constant income and industrial mix), and are willing to

spend more to maintain and improve environmental quality. Those interested in sustainable agricultural technologies have discovered that more highly educated farmers may be the most likely "early adopters" of agricultural production technologies that protect or maintain environmental quality. Similarly, education has been shown to be an important determinant of off-farm work and wages earned and thus, indirectly ensures small-farm survival during periods of economic stress in farming (e.g., Tokle and Huffman, 1991; Lass et al., 1991; Goetz, 1993).

The decade of the 1980s has been a period of rapid change with regard to efforts directed toward human capital development in southern states (see Goetz and Debertin, 1992*b* for an assessment of Kentucky's educational reform effort). Despite the importance of education, little, if any, systematic knowledge exists about (a) how the stock of human capital among persons 25 years and older has changed between 1980 and 1990 in individual counties and states, and (b) how this change has affected per capita incomes or poverty in the South. The 1990 U.S. Census provides an excellent opportunity to evaluate the progress that states and sub-state regions in the South have made with regard to human capital development in a dynamic context.

Recent work on the relationship between education and growth includes that of Barro (1991), who shows that economic growth for 98 countries during 1960-85 depended positively on initial human capital stocks. Killian and Parker (1991) examined the role of education in local job creation in rural areas, while McGranahan and Ghelfi (1991) studied the linkages between rural unemployment, rising demand for workers with more skills and education, and the fact that young workers are completing fewer years of schooling. While providing useful and important insights, this earlier work in general fails to address *changes* in the relationship between education and income over time. The problem of a static analysis is illustrated, for example, by Killian and Parker (p. 100): "Because [our variables] are measured at the same, initial point in time, we cannot empirically determine the direction of causality." Similarly, McGranahan and Ghelfi (1991, p. 72) point to the need for a more disaggregated analysis of non-metro areas to understand the relationship between development and education. The detailed county-level analysis in this study presents a refinement in this respect.

County-Level Human Capital Development Indicators

In the presentation that follows, we employ two types of measures: (1) those that represent the stock of human capital in a specific census year (either 1980 or 1990); and (2) those that represent changes in the stock of human capital over the decade. Maps illustrating the stock of human capital for a specific census year (1980 or 1990) illustrate, in essence, starting points and ending points in human capital development. Maps illustrating changes from 1980 to 1990 employing differences or percentage changes are useful in determining locations where progress in increasing the stock of human capital has been made, as well as highlighting those locations that have lagged behind. Both kinds of data and resulting maps can be useful in assessing human capital development within the South. In the discussion that follows, we highlight specific locations (counties) that are either ahead or lag in human capital development.

High School Completion Measures

The U.S. Bureau of the Census made a number of changes in the 1990 Census in the questions regarding education. Prior to the 1990 Census, respondents were not asked whether they had graduated from high school, but only if they had completed twelve years of schooling. Thus, individuals who had failed a grade and, as a result, did not graduate were treated in the 1980 Census as if they had completed high school. Further, gifted students who graduated from high school but skipped a grade would not necessarily report that they had attended 12 years of school. For the 1990 Census, the Census Bureau asked those surveyed specifically whether or not they had graduated from high school.

In Kentucky, as well as in a number of other states in the South, there has been a significant statewide effort to encourage those who did not complete high school to obtain a General Equivalency Degree (GED). While most employers may treat a GED as equivalent to a high school diploma, it is technically not a high school diploma. The 1990 Census treats those who completed a GED degree as if they had graduated from high school. In the 1980 Census, many of those who completed a GED may have indicated that they completed fewer than twelve years of schooling, since they did not attend formal schooling for 12 years.

Percent completing high school (twelve years of schooling) or more, the South, 1980.

This map illustrates the percent of persons 25 years old and over completing 12 years of schooling or more, consistent with the 1980 Census question. Persons 25 years and older not completing 12 years of schooling are concentrated in south central and eastern Kentucky, northeastern Tennessee, counties along the Mississippi river delta, as well as counties bordering the Rio Grande River in Texas. In addition, completion rates are low in parts of eastern Texas, as well as in various rural counties of Arkansas, Alabama, Georgia, Virginia, North Carolina and South Carolina.

Completion rates are high in the urban centers of Atlanta, GA; Dallas-Ft. Worth and Lubbock, TX; Oklahoma City, OK; Pensacola and Tallahassee, FL; and in the Washington, D.C. suburbs located in Virginia. Rates are also high in counties in the northern panhandle of Texas and the panhandle of as well as north central (as opposed to southeast) Oklahoma. Rates are also high in coastal counties of Florida and South Carolina, and to some degree Georgia and Alabama. These "sunshine" counties bordering major bodies of water tend to attract relatively well-educated and well-to-do retirees. Lastly, college towns with large universities rank high based on this measure.

Percent completing high school or more, the South, 1990.

Unlike the data for 1980, the 1990 data are based on whether or not the individual actually graduated from high school. Areas with low twelfth grade completion rates again stand

out: eastern and south central Kentucky and parts of Tennessee, and south central Texas. A comparison with the 1980 map reveals not as many counties along the Mississippi delta are in the second category from the bottom (in this case 42 percent) as was the case in 1980. At the same time, there are considerably more counties in the two uppermost categories on this map than was the case in 1980. A principal conclusion from these comparisons is that some counties in the U.S. South made significant improvements in terms of raising high school graduation rates.

It could be that while many high school graduates remain in rural counties of Texas and Oklahoma, they tend to leave upon earning a college degree. This in turn suggests that a high school degree alone no longer ensures mobility: nowadays a college degree is required. There is also a tendency for the counties in Oklahoma and Texas which belong to the Great Plains to have relatively more high school graduates.

In addition to the fact that many youth in other rural areas of the U.S. South do not complete high school because they may fail to see or experience tangible benefits of a formal education, the rural-to-urban brain-drain phenomenon is evident on this map: rural counties invest resources in the primary and secondary education of their young people, but they do not capture the benefits of having educated them. These benefits instead accrue to other, usually urban, areas.

In Kentucky the percent of college graduates in 1990 is uniformly low outside the major urban centers. In contrast, there are considerable differences between the eastern and western parts of that state in terms of the percent completing high school or more. The differences are especially apparent when one examines the same variables for rural and urban counties of Tennessee and Virginia. Thus, the low high-school completion rates in Kentucky is not limited to the eastern part of the state, as is commonly believed to be the case, but extends well into the south central portion (and into a handful of counties in Tennessee).

Percent change in high school completion, the South, 1980-90.

This percentage is calculated recognizing that the 1980 data represent those who have completed 12 years of schooling, but do not necessarily hold a high school diploma or its equivalent. Georgia, and to some extent Virginia and North Carolina as well as certain counties in east Texas, have had more success in percentage terms than other southern states in raising high school completion rates over the 1980-90 decade. The obvious band dividing Georgia and Alabama, a state which has been much less successful, is noteworthy. An effort may have been made in Georgia, North Carolina and Virginia to raise high school graduation rates. A similar effort was made in western South Carolina, and many counties in east Texas. It could also be that in-migration into Georgia, North Carolina, South Carolina and Virginia played a role.

Counties in west Texas, western Oklahoma and the coastal region of Florida had a smaller percent change because high school completion rates were already relatively high in 1980, so

there was little, if any, room for improving these rates. Hardly any improvements were made in other Texas counties, even though 1980 completion rates were low in 1980.

Median educational level, the South, 1980.

The median educational level, that is, the level which halves the educational distribution of persons 25 and over, has perhaps been the indicator most widely used by social scientists of the overall stock of human capital within an area. The 1990 Census does not report a median education figure for counties, and therefore data are presented only for 1980. This measure is useful only as a comparison with the other measures for which 1980 and 1990 data are available.

The median education level is low in the eastern and south central region of Kentucky extending into north central Tennessee on the one hand, and in the counties of south central Texas, on the other (especially along the Rio Grande). There are only two major areas in which median levels of educational attainment are low, and this map is quite different from that for high school completion rates, which showed three major regions with low rates.

In contrast, median levels of education are high in Fairfax, VA, near the Washington, D.C. area, as well as Chapel Hill in Orange County, NC. Aside from these four areas of extremes in median educational attainment, the map of the South is relatively uniform.

Dropout Measures

These maps indicate which states and counties have made the greatest progress over the decade in reducing the number of students that do not receive high school diplomas. There are some important differences across states and regions in the South. These differences are highlighted in the following discussion.

Change in percent not completing 12 years of schooling, the South, 1980-90.

As indicated earlier, Georgia has been particularly successful in reducing the percent of those not completing high school. In a few Georgia counties, the proportion of those not graduating was cut in half during the 1980s. The success of Georgia and the lack of success of counties along the Rio Grande in keeping students in school is noteworthy. Western Oklahoma ranks low based on this measure because, as indicated earlier, counties there had high beginning retention rates.

Percent with less than 9th grade education, the South, 1990.

Certain areas again stand out on this map: eastern and south central Kentucky, the northern counties of Tennessee and counties along the Mexican border. Coastal counties of

Florida have low percentages of adults with less than a ninth grade education. Again, this is likely to reflect the population consisting of well-to-do, educated retirees who have migrated from other parts of the U.S.

County-level high school dropout rates, the South, 1990.

Dropout rate data are from the U.S. Department of Education, National Center for Educational Statistics, and are based on cohort analysis. Dropout rates are high in some of Kentucky's low-income counties, including Menifee and McCreary counties. Certain counties in Georgia also have very high dropout rates, including those in or near the Chattahoochee National Forest. Two counties in Texas (Caldwell and Madison) have very high dropout rates. This is peculiar since the counties are located near major college towns (Austin, TX in Traverse county, and College Station, TX, respectively) which have a high percentage of adults with advanced or professional degrees. The generally low dropout rate along the Mississippi River in 1990 is remarkable, especially when one considers the low percentage of individuals completing high school in 1980.

College Completion Measures

As was the case for the high school completion data, the Census in 1980 did not specifically ask residents whether or not they had actually graduated from college, only if they had completed four years of college. Of course, not all college students obtain diplomas in four years: some take fewer credits each year, perhaps attend college only part-time, possibly encounter academic difficulties, or are enrolled in academic programs that require 5 or more years to obtain a degree (e.g. pharmacy and certain architecture programs). A few students complete four-year degree programs in less than four years. There was undoubtedly considerable variation in how these individuals classified themselves on the 1980 Census when asked how many years of schooling they completed. As a result, the 1990 Census asked specifically whether or not the individual had completed a four-year (bachelors or equivalent) degree.

The maps representing college completion rates look quite different from those depicting high school completion. Unlike high school graduates, most college graduates must leave the communities in which they grew up in order to find employment commensurate with their education. The effects of this migration, particularly from rural counties to the large urban centers are clearly evident in the data and maps presented here. Furthermore, college graduates tend to be concentrated in smaller cities in which a large college or university is a major employer. It is easy to recognize this phenomenon on the maps that follow.

Percent completing four years of college, the South, 1980.

College completion rates are generally higher in urban areas, although there are exceptions. Counties with large universities also stand out on this map: Raleigh-Durham-Chapel Hill, NC; Blacksburg & Charlottesville, VA; Lexington, KY; Nashville and (to a lesser degree) Knoxville, TN; Little Rock and Fayetteville, and surrounding counties in AR; and Stillwater, OK.

An example of a large university in a county with a low population density is Texas Tech. in Lubbock county, Texas. There the university is one of the primary local economic activities, and the presence of college professors with advanced degrees tends to dominate the educational attainment picture. In general, the counties with the highest completion rates are those with college towns or large research facilities. This phenomenon becomes even more apparent in the 1990 data.

Percent college graduates, the South, 1990.

On this map, Birmingham and Huntsville (site of the Marshall Space Flight Center) in Alabama stand out with their large numbers of college graduates. This is probably due to the large number of scientists employed at the NASA facility. Gainesville and Tallahassee in Florida also stand out (with the University of Florida and Florida State University), as does the University of South Carolina in Columbia, along with other major college towns throughout the southern U.S. Jobs requiring college degrees are generally located in college towns, and proportionately more college-educated tend to locate in these communities.

Between 1980 and 1990, there appears to have been an above-average increase in the percent of persons 25 years and older who are college graduates in counties along the Atlantic coast. This increase, in part, may reflect the immigration of individuals with college degrees who retired from well-paying jobs elsewhere in the country.

Percent completing advanced or professional degrees, the South, 1990.

This map highlights counties with major universities, such as Oklahoma State University in Stillwater, OK; Grambling University and Louisiana Tech. in Ruston, LA; the University of Virginia in Charlottesville, VA; the Research Triangle consisting of the Universities of North Carolina, North Carolina State and Duke, NC; the University of Georgia in Athens, GA; Texas A&M in College Station and the University of Texas in Austin, TX; the University of Mississippi in Oxford, MS; and the University of Alabama in Tuscaloosa, AL.

The map shows the influence of a college or university in small cities which are dominated by colleges as the main source of economic activity. This includes, for example, the University of Mississippi in Oxford in Lafayette county, and Louisiana Tech. University in Ruston. Alabama is an interesting state in this regard because the University of Alabama consists

of three campuses: the two urban universities in the largest cities of the state: Birmingham (UAB) and Montgomery (UAM); and the main campus at Tuscaloosa.

County-Level Income and Poverty Measures

From an economic development perspective, education and income are linked. Higher educational levels should lead not only to increases in per capita income levels within a geographic region such as a county, but also to a reduction in poverty. Maps illustrating income and poverty measures can be used to assess the extent to which these basic education-income linkages exist within states and counties in the South.

Percent change in income, the South, 1980-90.

Income growth rates in northern Texas and the panhandle of Oklahoma were especially high. This was probably the result of depressed agricultural incomes in 1980. By 1990 these incomes had recovered to their more nearly normal levels, so that a substantial improvement is observed in percentage terms in counties dominated by agriculture.

Many of the high-growth counties in southern Georgia tend to have an agricultural sector dominated by peanut production. High peanut prices set as a result of government price support programs during the 1980s may largely explain the high rates of income growth in those counties. More generally, agricultural counties in that part of the South have recovered from the low incomes of the 1980s.

The map also reveals continuing depression in the energy sector, notably in the coal-, gas- and oil-producing regions: oil in Texas, coal in eastern Kentucky and the strip mining regions of western Kentucky, and oil refining and production along the Louisiana coast which extends into Mississippi. 1980 was the tail end of a second round of OPEC oil cuts, so there is little if any improvement in income evident in the energy sector on the map. In summary, events in the energy and agricultural sectors tend to dominate this map.

Compound average annual income growth rate, the South, 1980-90.

The compound average annual growth rate is the rate r that, when used to compound the 1980 income level over the decade, would generate the reported 1990 income. High compound growth rates suggest rapid improvement in the well-being of residents. The message in this map is that agricultural counties fared well, as did urban and suburban counties surrounding heavily urban counties. All other areas tended to have lower compound annual income growth rates. In many instances, these other counties are forested areas; also, as expected, counties heavily dependent on energy had low income growth. This includes large portions of Mississippi,

Alabama and east Texas. The Ozark region of Oklahoma also experienced slow income growth. Arkansas fared somewhat better than the neighboring states of Louisiana, eastern Oklahoma and east Texas during the 1980s. To some extent this may have been related to rapid growth of the poultry industry in Arkansas.

Poverty rate, the South, 1990.

Very high levels of poverty prevail on the one hand in eastern and south central KY, in counties of Arkansas and Mississippi that border the Mississippi river, and in counties along the Mexican border along the Rio Grande river. There is also a band of high-poverty counties in west central Alabama, which are largely rural, part-time, mixed-farming counties.

Low poverty rates tend to occur around urban centers, and particularly suburban counties which surround major urban areas. Examples include the Washington, D.C. area in Virginia; Fort Myers in FL; the high-income counties making up part of the Dallas areas; and the suburbs of Atlanta (but not Fulton county, which is comparatively poor). Other examples of counties with low poverty rates include Loving county (with a population of only 91 in 1980), and Carson county in Texas with a population of 6,600 people.

Finally, it is noteworthy that the high poverty rates along the Mississippi river do not correlate with the educational attainment rates, especially when compared with the same variables for the regions in Kentucky and Texas identified earlier. This suggests that increased high school graduation rates have, at least in the short-term, not been a means of alleviating poverty among those living in the counties along the Mississippi river.

Summary and Conclusion

Three results from these maps are worth emphasizing. *First*, counties in parts of Kentucky and Tennessee, and counties bordering the Mississippi river as well as the Rio Grande in Texas, contained low percentages of individuals in 1980 who had graduated from high school. By 1990, counties bordering the Mississippi river experienced notable reductions in the absolute shares of individuals not graduating from high school, especially in comparison to the counties in Kentucky/Tennessee and Texas. Many counties in Georgia, Virginia and North Carolina also experienced large relative reductions in the proportion of residents without high school diplomas. *Second*, the increase in the proportion of adults with high school diplomas in counties bordering the Mississippi river was generally not accompanied by a rapid increase in income; furthermore, poverty rates in those counties were high in 1990. It remains to be seen whether the increases in educational attainment will eventually translate into higher incomes and economic well-being in the counties. *Third*, overall progress has been made in the U.S. South in terms of raising human capital stocks, but considerable disparities remain, even within individual states.

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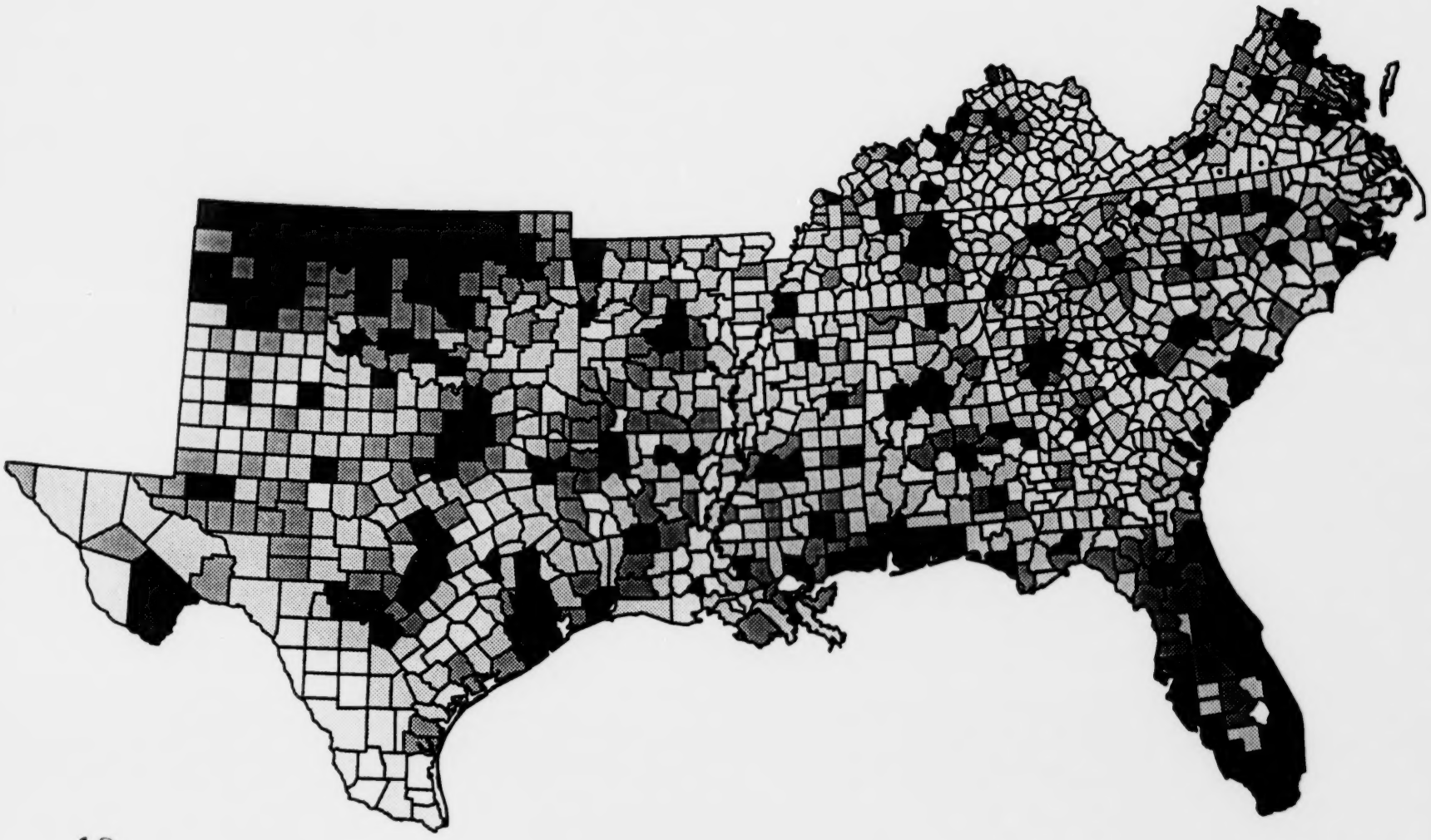
APPENDIX

Percent Completing High School or More, the South, 1980



18

19

HSORMORE

32
64

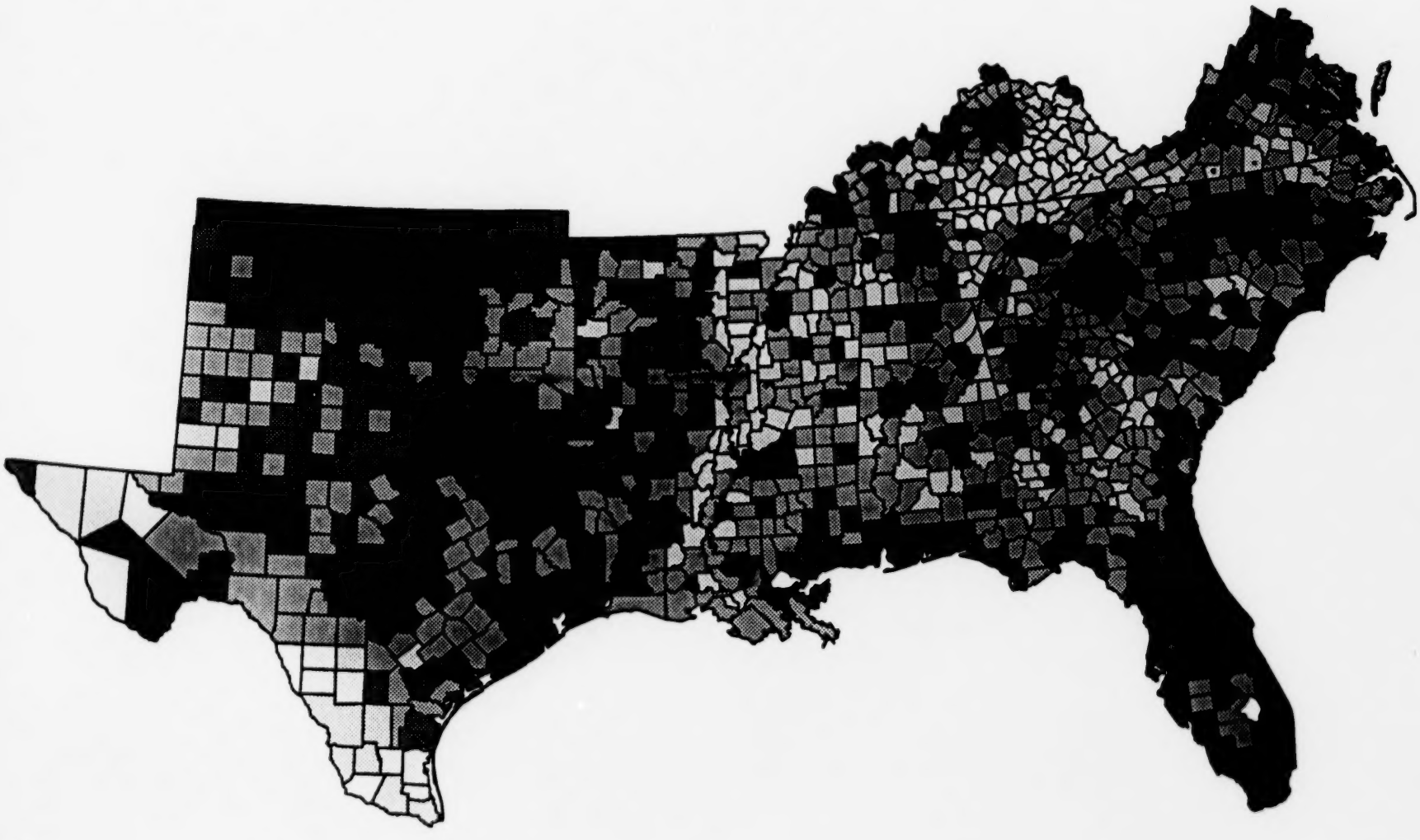
40
72

48
80

56
88

Legend values are midpoints within the range

Percent Completing High School or More, the South, 1990



20

21

HS90

34	42	50	58
66	74	82	90

Legend values are midpoints within the range

Percent Change in High School Completion, the South, 1980–90

22

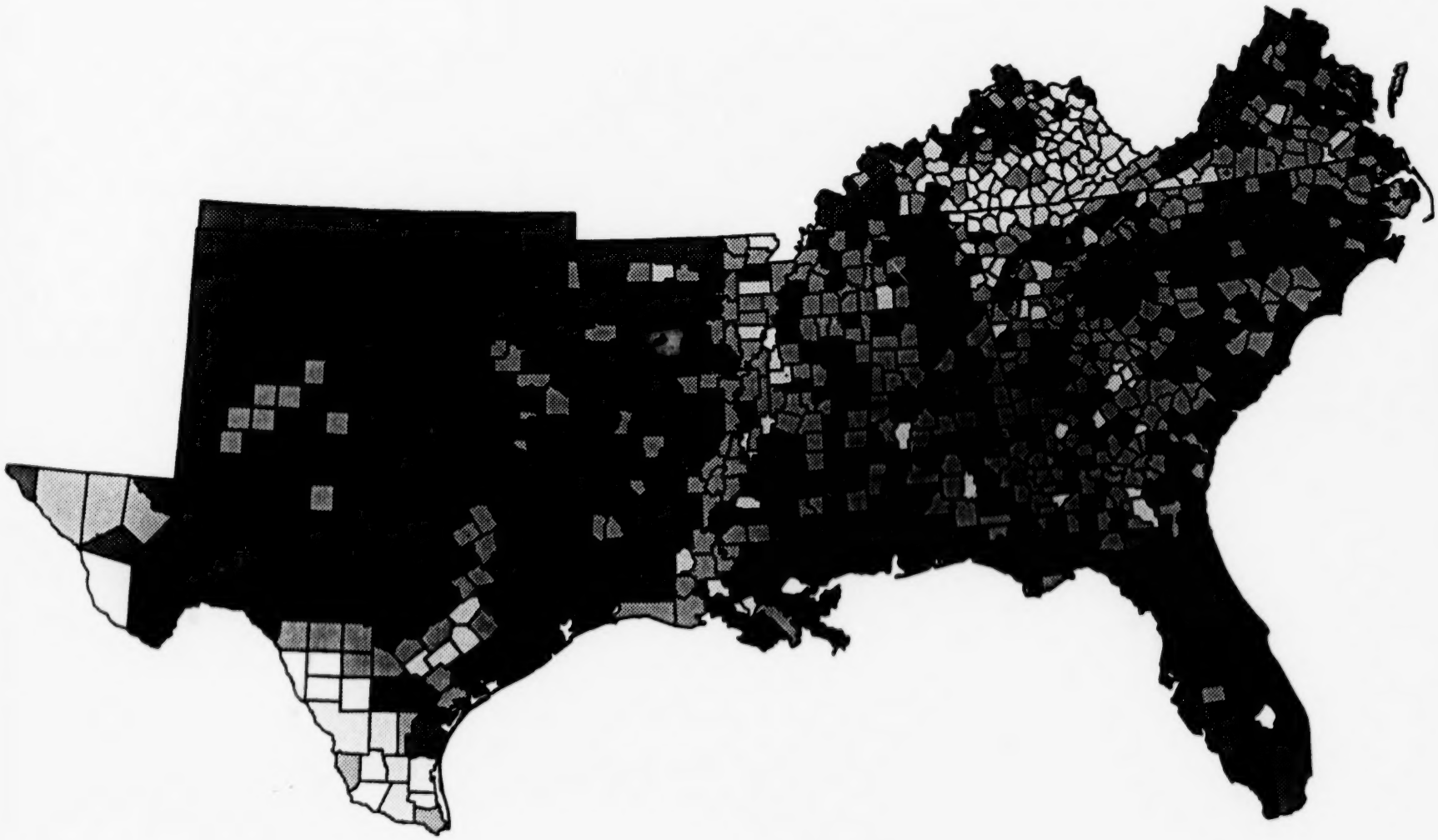
23

CHHS

0 16 | 4 20 | 8 24 | 12 28

Legend values are midpoints within the range

Median Educational Level, the South, 1980

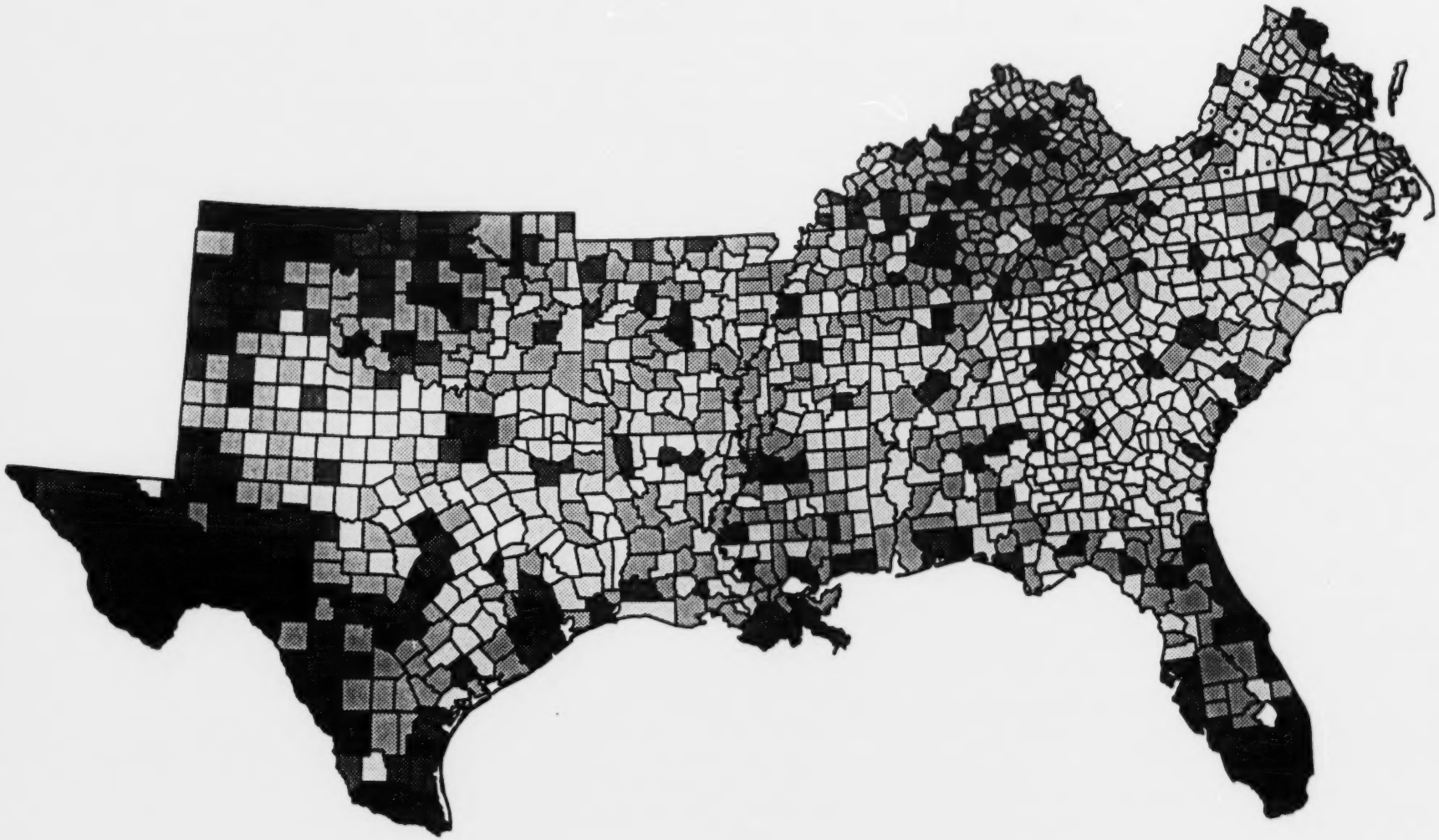


MED

7.2	8.4	9.6
10.8	12	13.2
14.4	15.6	

Legend values are midpoints within the range

Change in Percent Not Completing 12 Years Schooling, the South, 1980–90



26 CHNOHS

-45
-30
-15

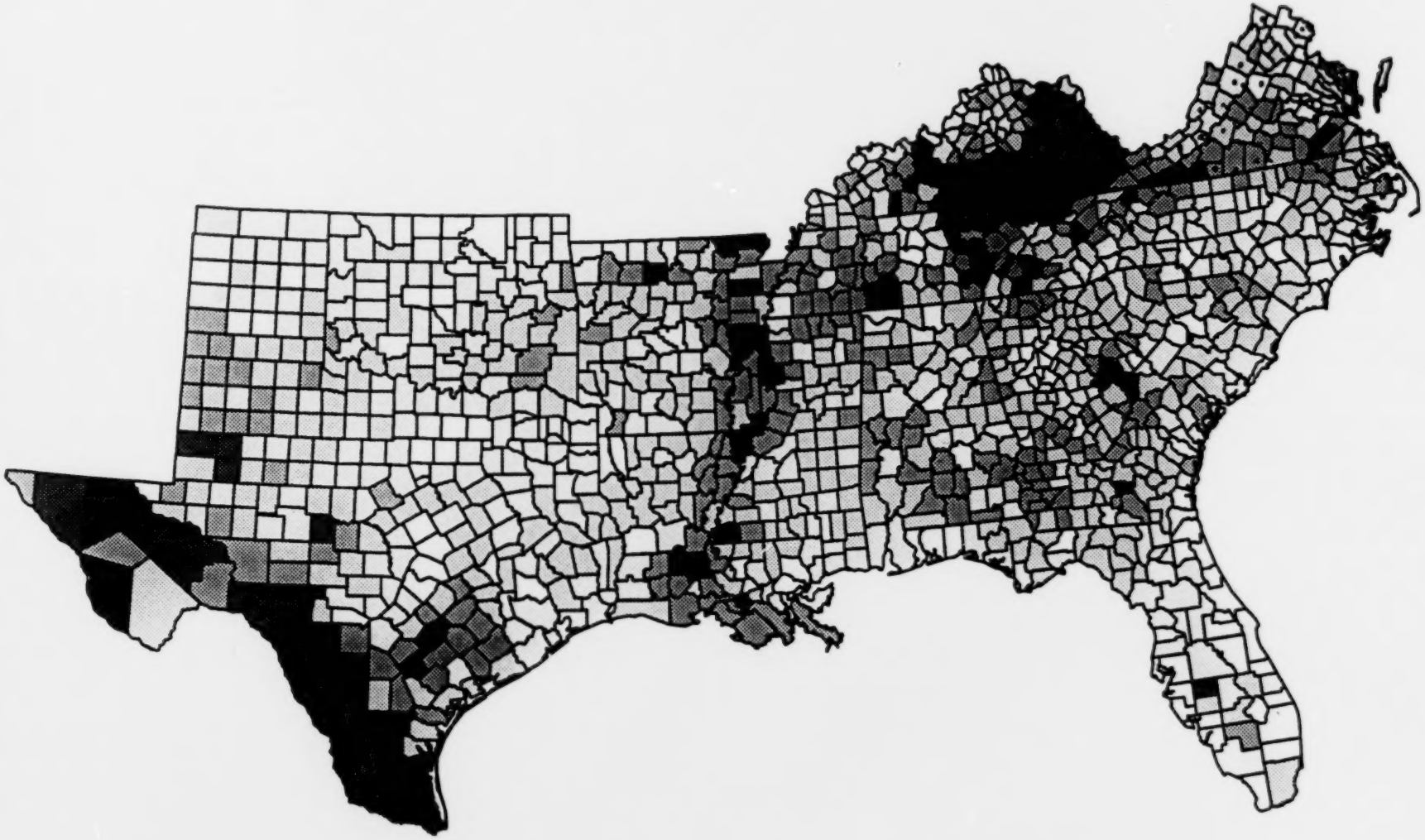
-40
-25
-10

-35
-20

Legend values are midpoints within the range

19 27

Percent with Less than 9th Grade Education, the South, 1990

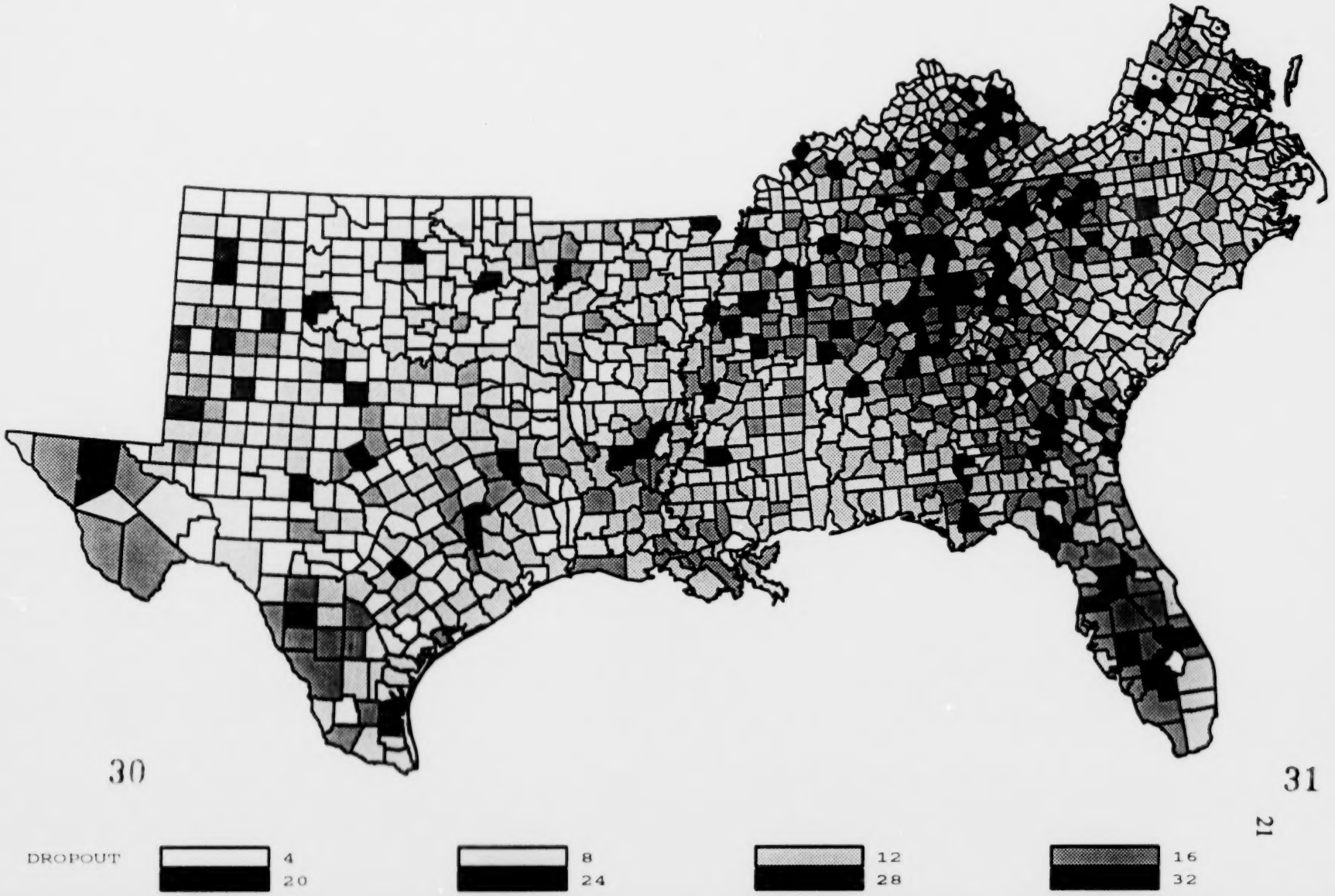


EIGHTH

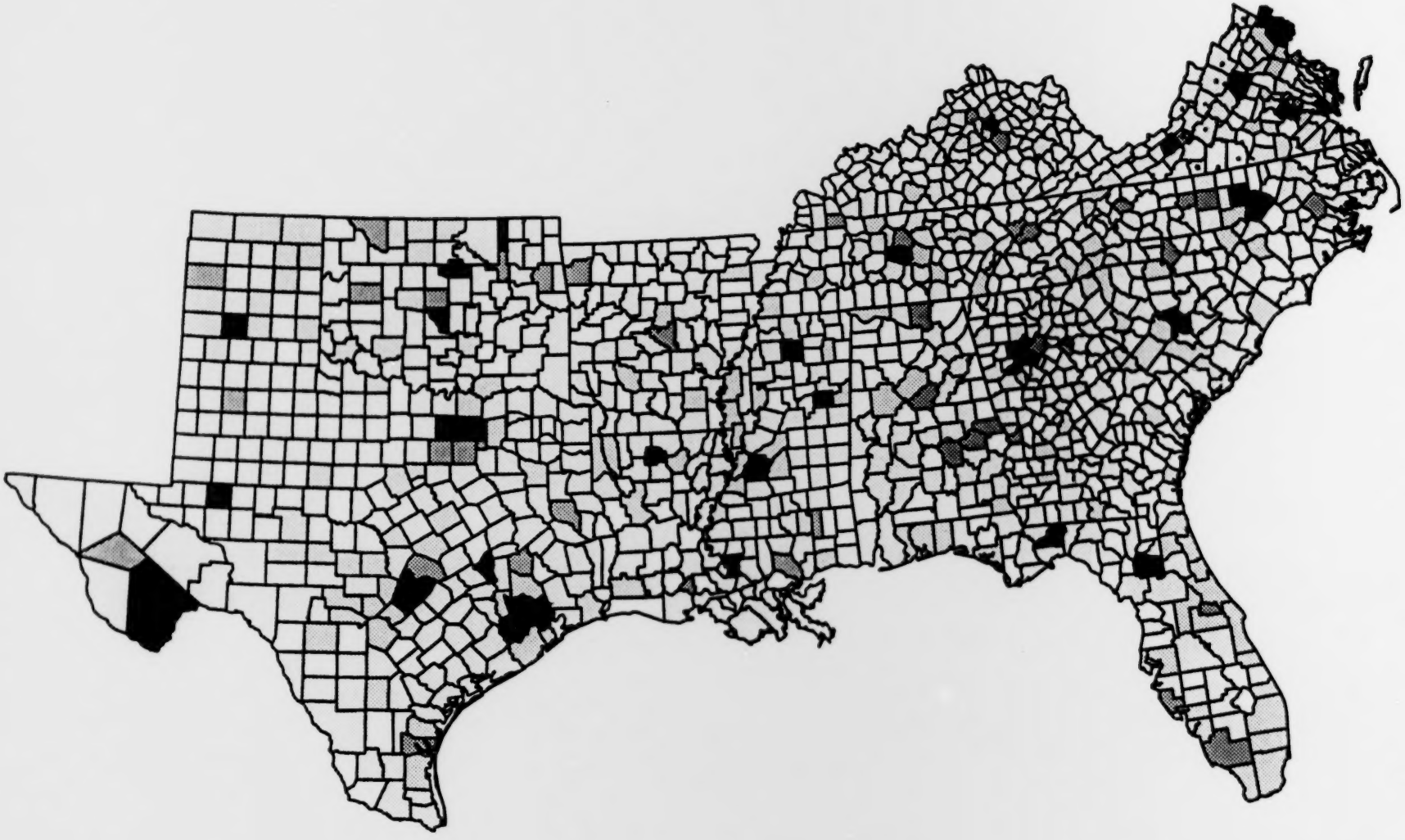
6	12	18	24
30	36	42	48

Legend values are midpoints within the range

County–Level High School Dropout Rates, the South, 1990



Percent Completing 4 Years College, the South, 1980

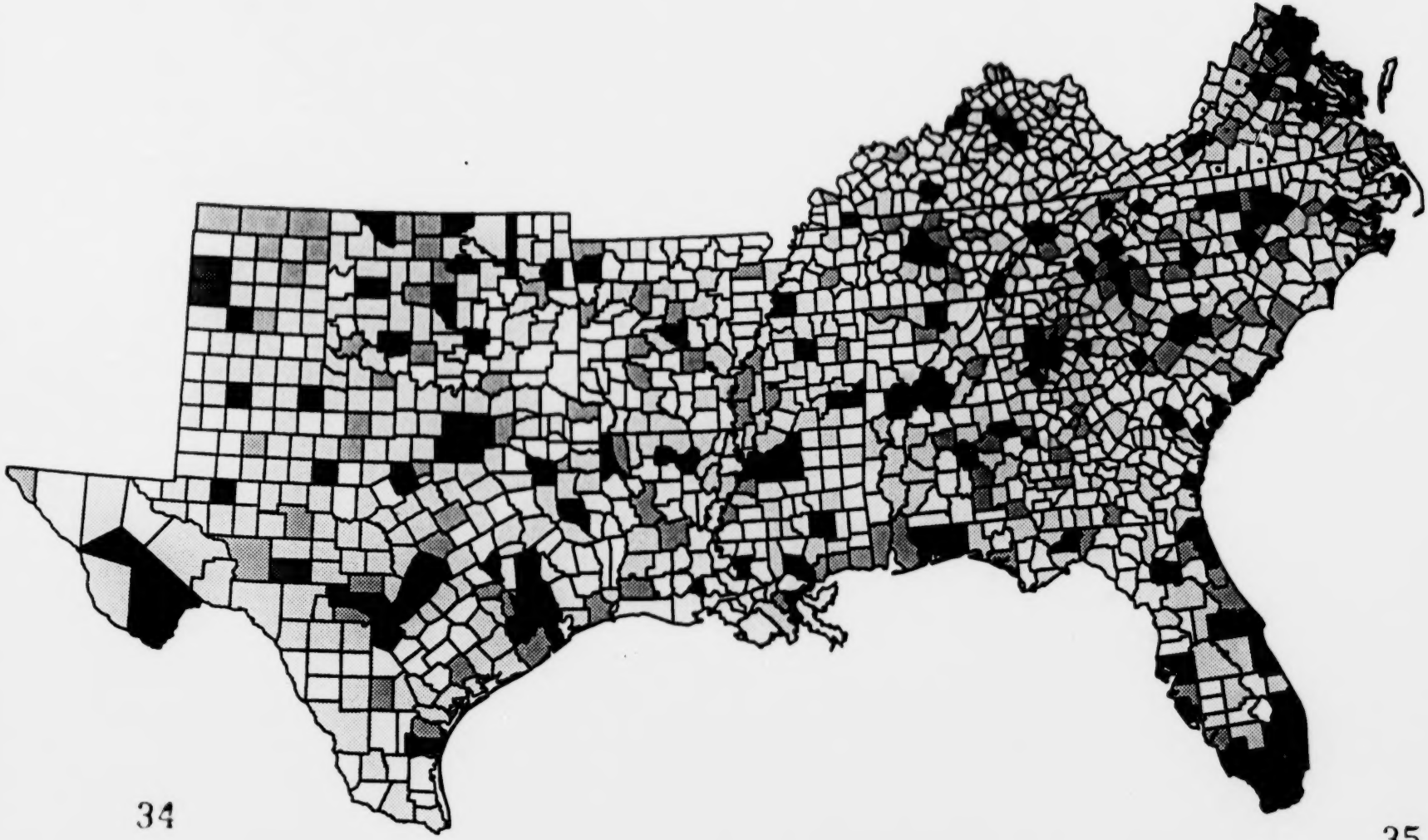


COLLEGE

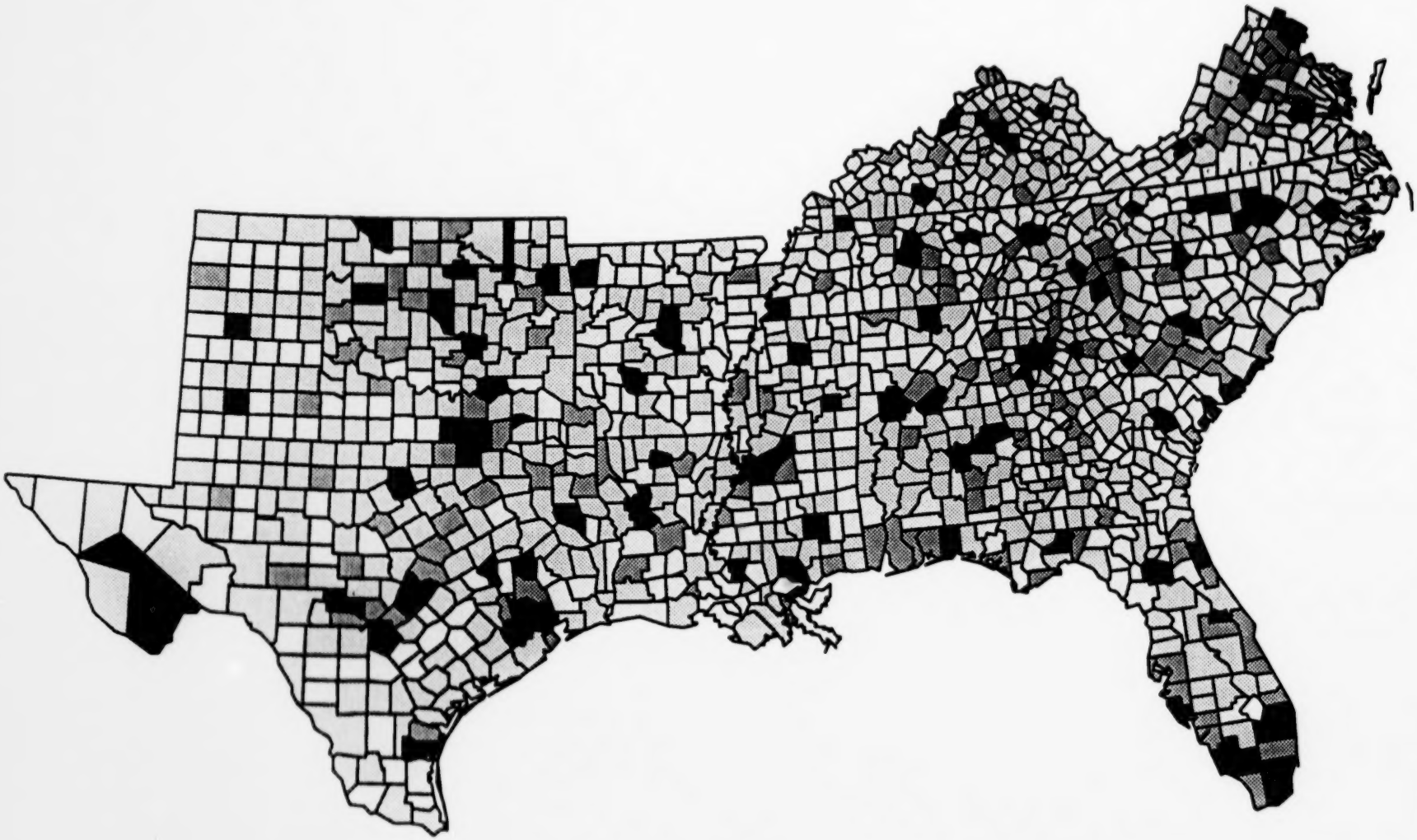
5
25
10
30
15
35
20
40

Legend values are midpoints within the range

Percent College Graduates, the South, 1990



Percent Completing Advanced or Professional Degree, the South, 1990



PROF

0
8

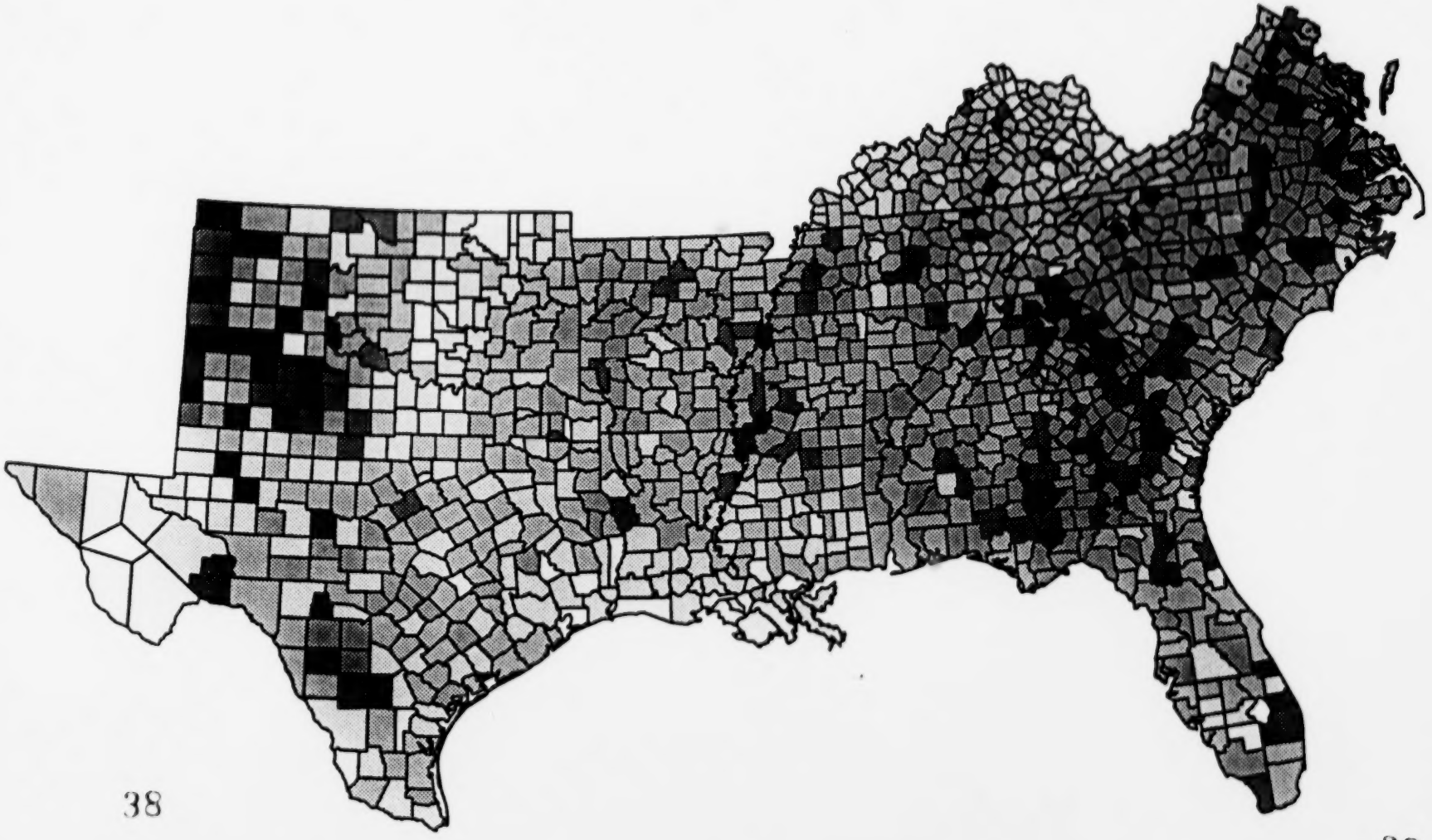
2
10

4
12

6
14

Legend values are midpoints within the range

Percent Change in Income, the South, 1980–90



38

39

PERINC

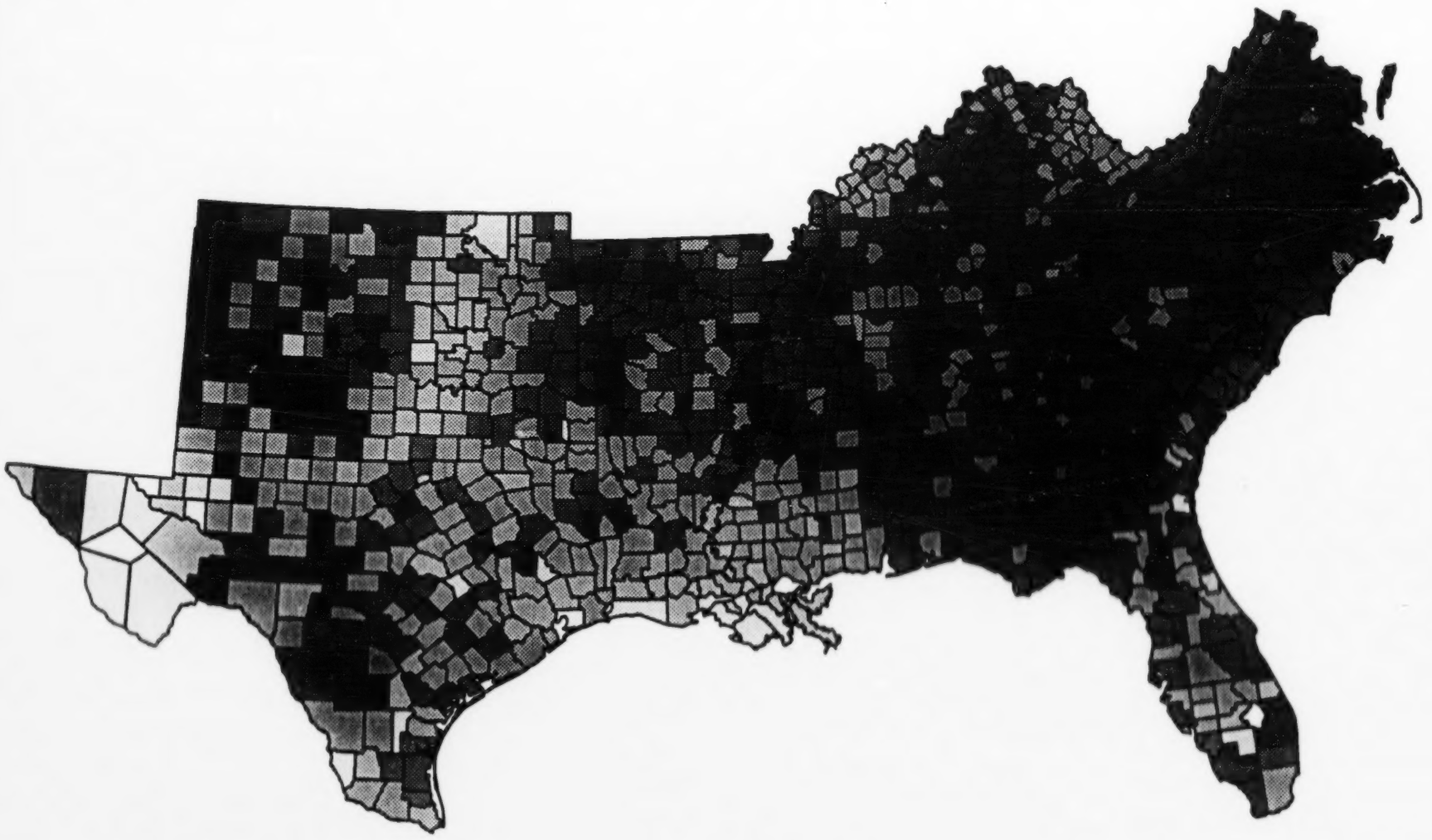
20
80
140
200

40
100
160

60
120
180

Legend values are midpoints within the range

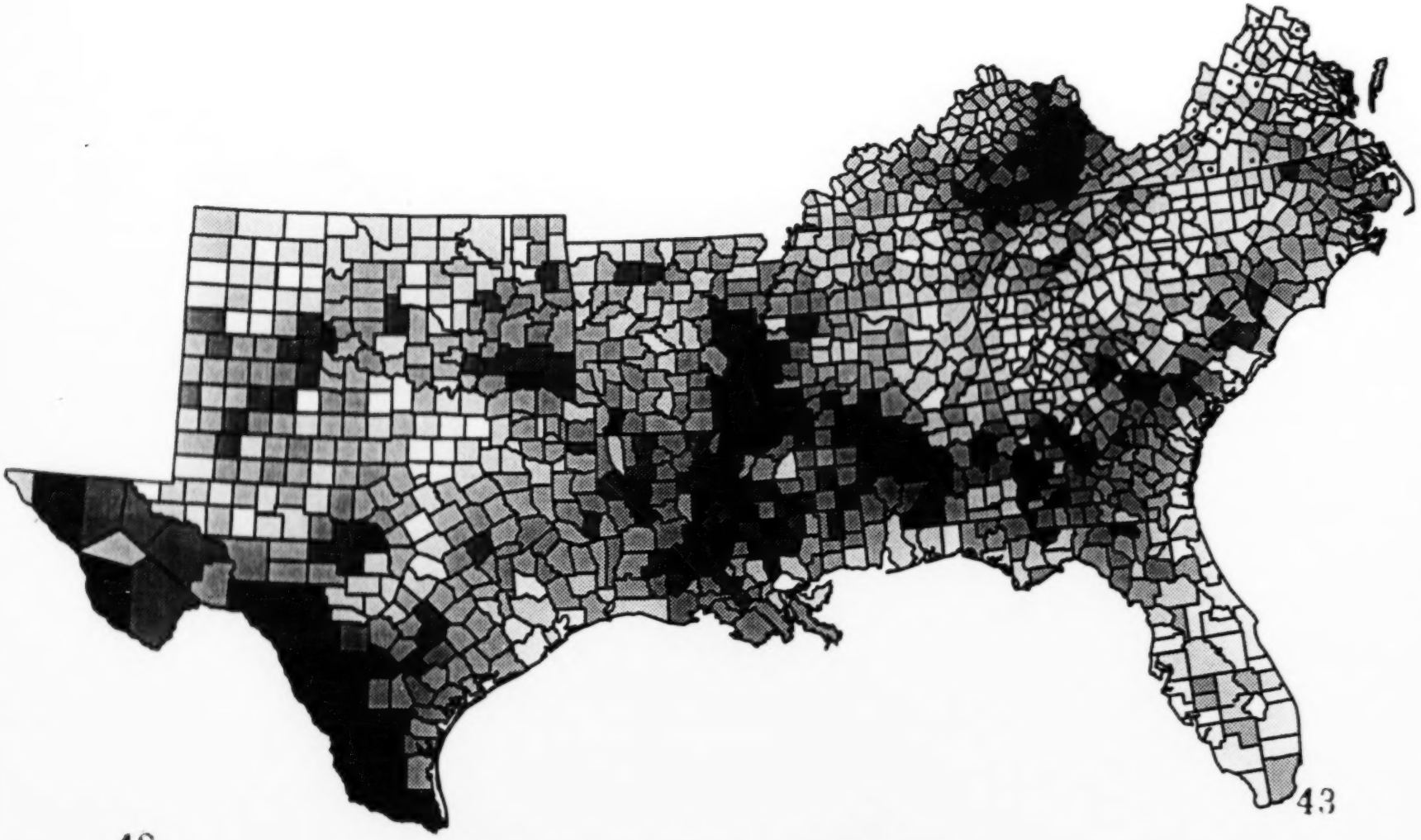
Compound Average Annual Income Growth Rate, the South, 1980–90



R 1 5 9 | 2 6 10 | 3 7 | 4 8

Legend values are midpoints within the range

Poverty Rate, the South, 1990



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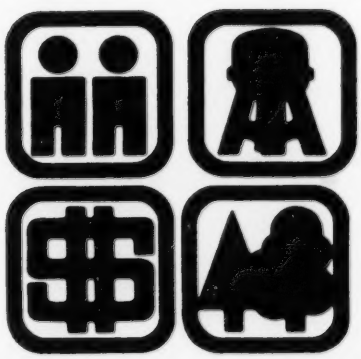

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